

IN THE CLAIMS:

Please amend the claims as indicated below.

- 5 1. (Previously Presented) A method for decoding a multidimensional code, wherein a multidimensional code symbol comprises a number of symbol components of lower dimensionality, said method comprising the steps of:
- compensating for intersymbol interference caused by previously transmitted multidimensional code symbols by calculating intersymbol interference
- 10 estimates based on one or more multidimensional code symbols; and
- compensating for intrasymbol interference caused by symbol components within a current multidimensional code symbol.
- 15 2. (Previously Presented) The method of claim 1, wherein multidimensional code symbols are transmitted over more than one symbol interval that is used to transmit one of said symbol components.
- 20 3. (Previously Presented) The method of claim 1, wherein said multidimensional code symbol comprises a number of transmitted symbol components of lower dimensionality that exceeds a number of available channels.
- 25 4. (Previously Presented) The method of claim 1, further comprising the steps of:
- calculating intrasymbol interference estimates based on possible data symbol values; and
- calculating branch metrics based on a received signal and said intersymbol interference and intrasymbol interference estimates.
- 30 5. (Cancelled).
6. (Cancelled).

7. (Cancelled).

8. (Cancelled).

5 9. (Original) The method of claim 1, further comprising the step of determining a best surviving path into a trellis state.

10. (Original) The method of claim 1, wherein said multidimensional code is 4D-TCM.

10 11-20. (Cancelled)

21. (Previously Presented) A system for decoding a multidimensional code, wherein a multidimensional code symbol comprises a number of symbol components of lower dimensionality, said system comprising:

15 means for compensating for intersymbol interference caused by previously transmitted multidimensional code symbols by calculating intersymbol interference estimates based on one or more multidimensional code symbols; and

means for compensating for intrasymbol interference caused by symbol components within a current multidimensional code symbol.

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22. (Previously Presented) The method of claim 1, further comprising the step of calculating a metric for an initial symbol component using survivor symbols from a corresponding state to account for intersymbol interference, wherein said metric is used for the calculation of a branch metric.

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23. (Previously Presented) The method of claim 22, further comprising the step of calculating a metric for a subsequent symbol component using survivor symbols from a corresponding state to account for intersymbol interference and using at least one data estimate to account for intrasymbol interference.

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24. (Previously Presented) The method of claim 23, further comprising the step of

calculating a combined metric by combining said metric for said initial symbol component and said metric for said subsequent symbol component.

25. (Previously Presented) The method of claim 24, further comprising the step of  
5 computing a branch metric for a transition in a trellis using said combined metric.

26. (Currently Amended) The method of claim 1, further comprising the step of  
calculating an intersymbol interference-free estimate using at least one survivor symbol  
from a survivor path ~~into a state~~.

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27. (Previously Presented) The method of claim 26, wherein said intersymbol  
interference-free estimate is computed for a first and a subsequent symbol interval.

28. (Previously Presented) The method of claim 27, further comprising the step of  
15 calculating an intersymbol interference and intrasymbol interference-free estimate based  
on said intersymbol interference-free estimate for said subsequent symbol interval and a  
data symbol that was determined based on said intersymbol interference-free estimate for  
said first symbol interval.

29. (Previously Presented) The method of claim 28, further comprising the step of  
20 computing a distance metric for said first symbol interval based on said intersymbol  
interference-free estimate for said first symbol interval.

30. (Previously Presented) The method of claim 29, further comprising the step of  
25 computing a distance metric for said subsequent symbol interval based on said  
intersymbol interference and intrasymbol interference-free estimate.

31. (Previously Presented) The method of claim 30, further comprising the step of  
computing a branch metric for a transition in a trellis based on said distance metrics for  
30 said first and subsequent symbol intervals.

32. (Previously Presented) The method of claim 31, further comprising the step of computing the best path into a state in said trellis.

33. (Previously Presented) A system for decoding a multidimensional code, wherein a  
5 multidimensional code symbol comprises a number of symbol components of lower dimensionality, comprising:

a decision feedback unit for compensating for intersymbol interference caused by previously transmitted multidimensional code symbols by calculating intersymbol interference estimates based on one or more multidimensional code symbols;

10 and

a branch metrics unit for compensating for intrasymbol interference caused by symbol components within a current multidimensional code symbol.

34. (Previously Presented) The system of claim 33, wherein said multidimensional code  
15 symbol comprises a number of transmitted symbol components of lower dimensionality that exceeds a number of available channels.